A Dynamic Model of Language Variation Applied to Innovative Phonological Patterns in the Fijian Dialect Chain

Barbara L. Prescott
School of Education
Stanford University
Stanford, California
U.S.A., 94305

Paper presented at the XIVth International Congress of Linguists
August 10-15, 1987
Berlin, Germany

Abstract

One concern in current sociolinguistic theories of language variation is to find dynamic models that integrate rules governing the 'lects' of a language into a unified description of that language. In this paper, four separate phonological innovations that have occurred in the Fijian dialect chain are examined in light of the developmental model of language variation proposed by Charles-James N. Bailey (1973). Testing the model for goodness of fit with non-Indo-European language data is necessary to determine its applicability to a general interpretation of language variation, as well as to historical explanation of phonological change.

The innovative patterns presented are Western Fijian a-Raising, loss of unstressed penultimate high vowels in Vanua Levu, palatalization of /t/ in western Viti Levu, and velar shift in eastern Viti Levu. It is argued that each of the attested phonological changes can be productively analyzed through the construction of implicational scales which point to relationships among features as well as give direction and rate of change in the Fijian dialect chain.

> *The patterns of a language are the cumulative result of natural, unidirectional changes, which begin variably and spread across the social barriers of age, sex, class, space, and the like in waves (Bailey 1973:36).*

Current sociolinguistic theories of language variation are concerned specifically with the heterogeneous aspects of language use, and with dynamic, rather than with static, models of language description. Of prime concern to variationists (Bailey 1973, 1980, 1984; Berdan 1983; Bickerton 1971; De Camp 1973; Fasold 1975, 1986; Klein and Dittmar 1979; Labov 1972, 1986; Wolfram 1975) is the integration of rules governing the 'lects' of a language into a unified description of that language. Reacting against traditional synchronic models of linguistics that have stressed homogeneous and static views of language, variationists are in the process of developing a metatheory capable of incorporating variability at the center of language study (Dürmüller 1983:155; Klein and Dittmar 1979; Ornstein 1974; Sankoff 1973; Trudgill 1986; Wolfram 1983).

Adopting the perspective that the study of variation is fundamental to a cohesive and dynamic theory of language, Charles-James N. Bailey has formulated a paradigm, largely based on the work of Labov (1969, 1972), that has as its base the following principles:

> *1. If variation above the level of systematic phonetics is structured and can reliably be attributed to what language users know about their language, it must be formulated in an adequate grammar.*
>
> *2. Directionality and relative rate of change can and should be incorporated into the descriptive apparatus of grammar.*
>
> *3. A wave model is required for explaining the patterns of variation in language data (Bailey 1973:34).*

This model maintains that rules generating implicationally arranged outputs (rather than synchronic optional rules) are required to provide an adequate account of language users' competence. In order to tap those implicationally arranged outputs, one must replace the standard concepts of dialect as a bundle of isoglosses with the more finely-tuned concepts of 'lect' and 'isolect':

> *If cross-hatchings of class, sex, age, and other social differences are superimposed on maps of regional variation, the traditional concept of dialect becomes hopelessly inadequate...Lect is a completely noncommital term for any bundling together of linguistic phenomena. Isolects are*

> *varieties of a language that differ only in a minimal way, say by the presence or weighting of a single feature in a rule, or by a minimal difference in rule ordering (Bailey 1973:11).*

This model further maintains that to the extent which implicational patterning can be found among the lects or isolects of a language system, a polylectal system can be formulated to include all the phenomena of that system. The implicational ordering of rules will indicate which lects contain specific features, and rule formation will employ marked feature weightings. Whatever marked orders are found in the rules should appear in the overall grammar. Furthermore, various patterns which are due to more general rules or to less marked weightings of features will specify how waves spread through the system, and which features in a rule will be deleted to make the rule more general.

In order that a model have universal validity, it must be applicable in a wide variety of languages. Testing its 'goodness of fit' will also bring out strengths, weaknesses, and necessary modifications which only multiple language perspectives can provide. Relevant language data were found in Paul A. Geraghty's recent work on the history of indigenous Fijian languages (1983). Geraghty does not apply a specific theory of variation in the analysis of his Fijian data. However, a key feature of his analysis is the categorization of Fijian speech varieties neither into 'languages' nor 'dialects' but into what he terms, 'communalects':

> *I shall use the term 'communalect' to signify a variety of speech with little or no apparent regional variation. A 'communalect' typically covers a number of villages in a geographically defined area, but may be confined to one village, or be spread over more than twenty villages. In my judgements about where one communalect ends and another begins, I have relied heavily on the opinions of native informants. In most instances, a 'communalect' is a variety spoken by people who claim they use the same speech (Geraghty 1983:18).*

Geraghty identifies and focuses upon 38 indigenous communalects (about 25% of the total number to be found in Fiji) whose features form his data set (see Appendix, Map 1). The name given for each communalect is usually one by which it is widely known, often the name of a kin group or old administrative area (Table I). Each communalect is distinguished by a minimal number of rules, and is a smaller unit than that of the traditional dialect. With these points in mind, one can compare Geraghty's concept of communalect with Bailey's concept of isolect. Both focus on minimal units of variation (e.g., regional, social, stylistic) to determine the boundaries of a 'lect'. Bailey states that specific differences in feature weighting may be sufficient to distinguish isolects, and Geraghty's identification of communalects incorporates minimal feature variation and rule ordering as well as social aspects of each speech community. Assuming these basic definitions (isolect and communalect) to be generally comparable, one can begin to look at the Fijian data in light of Bailey's dynamic model.

Table I

Data Set

Geographical Distribution of 38 Communalects in Fiji
(from Geraghty, 1983)

NW ISLAND	1. Waya (WAY)	
WESTERN VITI LEVU	2. Nakoroboya (KBY)	
	3. Magodro (MGD)	
	4. Noikoro (NKR)	
	5. Tubaniwai (TBW)	
	6. Baravi (BRV(N))	
	7. Batiwai (BTW)	
	8. Tubai (TBI)	
	9. Nalea (NLE)	
EASTERN VITI LEVU	10. Namosi (NMS)	
	11. Waidina (WDN)	
	12. Lutu (LUT)	
	13. Nadrau (NDR)	
	14. Tokaimalo (TKM)	
	15. Namena (NMN)	
	16. Naimasimasi (NMM)	
	17. Lovoni (LVN)	
SW ISLAND GROUP	18. Ono (ONO)	
	19. Tavuki (TVK)	
	20. Nabukelevu (NBL)	
EAST ISLAND GROUP	21. Lau (LAU)	
	22. Vanua Balavu (VBL)	
WESTERN VANUA LEVU	23. Navatu (NVT(B))	
	24. Solevu (SLV)	
	25. Bua (BUA)	
	26. Navakasiga (NVS)	
	27. Gone Dau (GOD)	
CENTRAL VANUA LEVU	28. Baravi (BRV(M))	37. Savusavu (SAV)
	29. Seaqaqa (SQQ)	38. Nabalebale (NBB)
EASTERN VANUA LEVU	30. Labasa (LBS)	
	31. Dogotuki (DGT)	
	32. Saqani (SQN)	
	33. Koroalau (KRL)	
	34. Navatu (NVT(C))	
	35. Tunuloa (TNL)	
	36. Naweni (NWN)	

The purpose of the following discussion will be to apply Bailey's developmental model to specific examples of Fijian phonological innovation and to make initial steps toward the interpretation of minimally variant phonological movement in Fijian communalect history.

The Developmental Model of Language Variation

"*Developmental linguists are those with a holistic view that the flux of data and the constant universal relationship or patterns among the flux are both amenable to study and are real. (Bailey 1980:96)*". The rules found in patterns of variation that are produced by specific relationships must account for all possible varieties in a language. The application of the rules found are constrained through their ordering in implicational sets or scales. Bailey makes use of De Camp's adaptation of the Guttman Scalogram (De Camp 1970:162) to determine the implication regarding the status of one feature or rule from the status of another (Ornstein & Murphy 1974:151).

De Camp (1970, 1973) suggests, by analogy to feature analysis, that language varieties can be ordered along a continuum and thus exhibit an implicational relationship. Bailey (1973) adopts this system in which features are related to language varieties, and continues to formulate a very specific method of characterizing implicational relationships (Figure A). Furthermore, Bailey (1973) maintains that implicational relationships are established in terms of markedness and weighting of features. Rules are then written with the information provided by these implicational feature relationships in their least general form. The system is illustrated by, and uses as a basis of explanation, the wave theory of feature movement through space and time (originally Schmidt 1872). An example of the wave theory supported in Bailey's model (henceforth referred to as the developmental model) is given in Figure B. This developmental paradigm (i.e., variation studied through implicational scales, rules, and the wave theory) is devised to account for specific feature change along a continuum and, thereby, to account for the change of language varieties through time. With this developmental model in mind, one can now look to the situation of complex language varieties found in Fiji.

Communalects in the Fiji Islands

Fijian is a member of the Eastern Oceanic family and subgrouped with the Polynesian languages (Pawley 1970; Schütz 1985). It is spoken on the islands of Viti Levu, Vanua Levu, eastern Kadavu, Lau, Lomaiviti, Taveumi, and Bau (see Appendix, Map 1). The speech variety used on Bau is considered the standard, and written, variety (Schütz 1985).

Pawley and Sayaba (1971:407), investigating Fijian dialects, identified a type of speech variety which they termed 'communalect'. This signified a variety of speech with minimal variation. Following Pawley and Sayaba, Geraghty (1983) studied innovation within 38 indigenous communalects in Fiji, and noted:

> *an innovation with a restricted distribution may be an ancient innovation lost in many witnesses; conversely a widely distributed innovation may have been recently borrowed across a wide area (Geraghty 1983:387).*

Figure A

Relating Features to Varieties

Features					
F1	F2	F3	F4	F5	
1	1	1	1	1	V1
1	1	1	1	0	V2
1	1	1	0	0	V3
1	1	0	0	0	V4
1	0	0	0	0	V5
0	0	0	0	0	V6

Varieties

This table shows that if the value of a square (the intersection of features and varieties) is *1*, any square above or to its left will also be *1*; if *0*, any square below or to its right will also be *0*. Thus, if a speaker uses the variant pronunciation *F2*, one can predict that she or he will also use the variant *F1*, and so on.

(Adapted from Dürmüller, 1983)

Figure B

Wave Theory

Time 0: 0

Time 1: a 0

Time 2: b a 0

Time 3: c b a 0

Given a relative time *0* at some focal point in social or regional space, a feature *a* may enter variably at Time 1 and spread to a larger space; later a more general version of *a*, called *b* enters at the same point and spreads; even later a still more general form of the rule enters, so that the ensuing wave can be described as an implicational scale.

In the following discussion, four separate phonological innovations occurring in the communalects identified by Geraghty will be investigated. By applying the developmental model, one can begin steps that determine the extent to which rate and direction of phonological change can be explained by the scale framework and wave theory presented by Bailey. Furthermore, relative implicational relationships among these phonological innovations can begin to be constructed using the developmental model.

Toward the Construction of Implicational Scales: Phonological Innovation

1. Western Fijian a-Raising

Geraghty states (1983:172) that the raising of ai to ei is a characteristic change occurring in most of western Fiji (Appendix, Map 2). The change appears to be stress conditioned, taking place only when ai is not under primary stress. Therefore, the rule reads: a > e /_ i. Those forms reported to have undergone the change are:

1) na i-N article plus preformative i- of the following noun
2) lai-V passive forming prefix
3) qai V 'then'
4) dai-n 'leave, put'
5) mai V 'come and, then'
6) V dai 'away'

Geraghty notes that, in some instances, ei may be futher raised to i, perhaps by subsequent application of an ei raising rule. The data provided by Geraghty (1983:173) illustrating the communalects in western Fiji which did or did not raise ai to ei were used to construct a scale of attested forms. By taking the percentage of forms that attest to the a-Raising rule (Table II-B) as well as the information provided, that "*...the a-Raising rule appears to be strongest in the NW and weakest in the SW (1983:173)*" of west Fiji (specifically the island of Viti Levu), one can begin to devise an implicational scale of change (Table II-A). Communalects are hierarchically arranged by percentage of forms undergoing the a-Raising shift (e.g., KBY = 100% to NLE = 0%), then compared to the forms listed above to discover possible implicational relationships.

It can be noted that, although the scale does not provide an exact progression, a clear pattern is emerging. This change has begun in communalect KBY (NW), providing the most favorable environment, and the form which appears to be most heavily weighted (i.e., changes most quickly through the communalects) is dai-n. The next most heavily weighted form may be qai V, although some conflict in the data provided by communalects NKR and TBW is noted. The discrepancy may be due to another variable rule (as yet unattested) competing in this environment with the a-Raising rule.

The third most heavily weighted form, lai-V, shows a discrepancy only in communalects BRV and NKR. This may be a result of the need for more finely-tuned observation of the innovations occurring in these communalects, or may actually give cause to rethink Bailey's maintained concept of unidirectional change. It may be valuable to closely examine the environment of those communalects

Table II-A

Innovations in Western Fijian a-Raising

Toward the Construction of an Implicational Scale

RULE: *a > e / _ i

Forms undergoing change:

Communalect:	mai V	na i-N	lai-V	qai V	dai-n	V dai
NLE	0	0	0	0	0	-
TBI	0	0	-	0	0	0
BTW	0	0	0	0	0	0
TBW	0	0	0	X	0	1
NKR	0	0	1	0	1	-
BRV	0	0	0	1	1	1
MGD	-	1	1	1	1	0
WAY	0	1	1	1	1	1
KBY	1	1	1	1	1	1

Key:

0 = ai form (a-Raising not attested)
1 = ei form (a-Raising attested)
X = both ai and ei attested *(true variable rule)*
- = no forms available from data base

Note: The communalects cited are found in Western Viti Levu.

Table II-B

Innovations in Western Fijian a-Raising

Percentage of forms attesting a-Raising shift

1.00 = KBY (+)

.86 = WAY (X)

.80 = MGD (X)

.64 = BRV (X)

.56 = NKR (X)

.55 = TBW (X)

.20 = BTW (X)

.20 = TBI (X)

.00 = NLE (-)

Key:

\+ = complete shift from ai to ei attested

X = both forms ai and ei attested *(shift in progess)*

\- = only ai form attested *(no evidence of shift)*

Note: See Map 2 for geographical distribution.

that are not following the proposed direction or rate of change (i.e., TBW, NKR, and BRV) to note if other, more heavily weighted, conflicting phonological innovations are occurring and supplanting the a-Raising rule. The pattern of na i-N follows in clear progression and is yet less heavily weighted than lai-V. Finally, the least weighted item, mai V, has shifted the rule only in the most favorable environment (KBY). Each form may imply the use of the form preceding it (from left to right), thereby providing a means of observing the relationship through scaling. The form V dai is separated from the others due to a lack of attested items although the pattern is still evident. Therefore, the change through time is hypothesized to occur from North (KBY) to South (NLE) with an implicational relationship beginning to emerge.

The developmental model calls for a calculated weighting of each feature/form to determine the flow of change, but in this presentation only a general weighting of the items can be attempted. Since a shift in time and location of use appears to be occurring (N to S), one might hypothesize that the earliest and most favorable environment occurred in communalect KBY, then in WAY, and so forth.

Bailey maintains that one major factor which differentiates his 'lectology' from former dialect work "*...is the discovery of linguistic patternings in place of the older emphasis on geographical patternings. It makes little difference where the locales are placed relative to one another on a map (1972:159)*". However, it must be noted that the link between time and geographical change in the developmental model is, indeed, very close. Although pattern in geographical space is not of prime concern to Bailey, his wave model intrinsically has the concept of geographic distribution built into it. Waves cannot occur outside outside social, interactional, or geographic space. The a-Raising rule shift is a case in point. Geraghty states that the shift has been observed to occur generally from north to south. The scale constructed by communalect and percentage of forms attesting to change confirms this geographic distribution through time, and gives further, more clearly detailed, contextual information on rate and path of change in phonological features. Therefore, in this case at least, the factor of geographical distribution must be considered in tandum with social, gender, age, and class factors to more clearly determine direction and rate of phonological change.

2. Loss of Unstressed Penultimate High Vowels in Vanua Levu

Geraghty notes (1983:169) that in all Fijian communalects, it is the first vowel in a low, or mid, to high sequence that is always unstressed. However, it is common to find instances or loss of the unstressed member of the seqence since such sequences occurring in penultimate position appear to violate a general principle of penultimate stress. Most of eastern Fiji conforms to the rule that assigns stress to the first vowel in a rising vowel sequence (e.g., raica > ráica). However, in Vanua Levu, the two rules are in competition and the consistent tendency is to remove the competition by a loss of the unstressed vowel (e.g., ráica > réca). Some forms in which the change has been attested are:

1.	dai-na	'put it'
2.	v-sinai-ta	'fill it'
3.	kwaile	'wild yam'
4.	kauta	'take it'

Table III-A

Loss of Unstressed Penultimate High Vowels in Vanua Levu

Toward the Construction of an Implicational Scale

RULE: *i, *u > ∅ /a CV#

Forms undergoing change:

	leuta	kau-ta	v-sinai-ta	kwaile	dai-na	rau-
Communalect:						
NVT	0	0	0	0	0	0
NWN	0	0	0	0	0	0
DGT	-	-	0	0	1	1
BUA	0	0	0	1	1	1
SQN	0	-	0	0	1	1
NVS	0	0	0	-	-	1
BRV	-	0	0	-	1	1
SAV	-	1	1	-	1	1
KRL	-	-	0	-	1	1
LBS	0	-	-	1	1	1
GOD	-	-	-	1	-	1
SQQ	-	1	1	1	1	1
NBB	1	1	1	1	1	1

Key:

0 = i or u attested (no evidence of high vowel loss)
1 = 0 form attested (loss of high vowel)
- = no forms available from data base

Note: The communalects cited are found only in Vanua Levu

Table III-B

Loss of Unstressed Penultimate High Vowels in Vanua Levu

Percentage of forms attesting the loss of unstressed penultimate high vowel

1.00 = NBB (+)

1.00 = SQQ (+)

1.00 = GOD (+)

.92 = LBS (X)

.86 = KRL (X)

.80 = SAV (X)

.71 = BRV (X)

.50 = NVS (X)

.50 = SQN (X)

.45 = BUA (X)

.38 = DGT (X)

.00 = NWN (-)

.00 = NVT (-)

Key:

+ = complete loss of high vowel attested *(total shift)*

X = both forms attested *(shift in progess)*

- = only i or u form attested *(no evidence of shift)*

Note: See Map 3 for geographical distribution.

5.	leuta	'hold it out'
6.	rau-	'leaf'

By constructing a scale of these forms by communalect, one can again begin to see a pattern emerge (Table III-A). However, there are a number of communalects from which no forms were obtained, either attesting a change or maintaining a penultimate high vowel. Therefore, further data collection is necessary to fill these information gaps and to clarify implicational relationships, as well as to determine whether the constructed scale presents an accurate view of the directionality and rate of change (Tables III-A, III-B). The scale exhibits certain inconsistences (e.g., BUA and SQN presenting a shift in the expected direction of the loss of the high vowel in the form kwaile), but these may actually point to overlapping innovations that have changed the directionality of the high vowel loss. It should be reiterated that any hypothesis, however tentative, formed in light of the information presented by implicational scale construction must be tested by further, more finely-detailed, data.

Based on his observations, Geraghty states, *"the picture that emerges is one of an innovation spreading outward from central Vanua Levu (1983:175)"*. The scale constructed, in this paper, on the basis of percentage of forms attesting to the loss of the high vowel supports this hypothesis. Those communalects having 100% of their forms undergoing this shift are centered in Vanua Levu (i.e., SQQ and NBB). Those communalects showing the least percentage of attested forms (i.e., NVT and NWN) are located on the coastal regions of the island (Appendix, Map 3). Again, geographical distribution is a feature that aids in the interpretation of the shift. The change is presumed to originate in communalects NBB, SQQ, or GOD. The data presented do not allow for a more specific location, although GOD is an unlikely candidate, being further from the center of the island than the other two communalects. The most heavily weighted form is rau-, since the loss seems to have occurred most rapidly and completely in this item. The weighting moves generally from rau- to leuta. The latter form appears to be the least weighted, and slowest to change, over all communalects. In order to clarify the movement of change through communalects, a wave model with the most weighted form at center (i.e., rau-) in time step 1, moving outward in subsequent relative time sequences is used to illustrate these innovations (Figure B).

3. Palatalization of /t/ in Western Viti Levu

Palatalized /t/ and /d/ are frequently found in Fijian communalects (1983:50). Geraghty notes that the most common environment for palatalization is before i, although sometimes e is included, (i.e., *t > s / _ i,e*). Using Geraghty's data from Western Viti Levu (1983:187), one can construct a scale that is clearly implicationally ordered (i.e., *t > s / _ i,e* implies *t > j / _ e*, which in turn implies *t> j / _ i*). This implicational relationship is supported by Geraghty (1983:50). The constructed scale suggests that the origin of palatalization is either the communalect BRV or TBW. Further, more detailed data, may reveal which of these (if either) is the communalect of origin. The environment in which the feature is most greatly weighted is that of *t > j / _ i* since it is the environment in which the change occurs most quickly (Table IV; Appendix, Map 4).

Table IV

Palatalization of /t/ in Western Viti Levu

Toward the Construction of an Implicational Scale

RULE: t > j / _ i, e or t > s / _ i, e

Environment:

Communalect:	t > s / __ i, e	t > j / __ e	t > j / __ i
WAY	0	0	0
KBY	0	0	0
MGD	0	0	0
NKR	0	0	1
BTW	0	0	1
TBI	0	0	1
NLE	0	0	1
TBW	1	1	1
BRV	1	1	1

Key:

0 = /t/ form attested (no palatalization in evidence)
1 = /j/ or /s/ form attested (palatalization in evidence)

Note: The communalects cited are found only in Western Viti Levu

See Map 4 for geographical distribution and implicational ordering

Therefore, another clear pattern is emerging, and this scale again appears to be compatible to Bailey's model for implicational relationships. The next step in this analysis is to assign weightings to each of these features (1973:87). However, that step is contingent upon collection of more specific data, especially for those areas about which Geraghty expresses the concern, "*my coverage for some areas was very slight...and the mapping of this area will have to be thoroughly rechecked (1983:50)*". Therefore, although this data yields the most convincing relationship (of the four innovations analyzed in this paper), and it is tempting to assign weightings to each feature, the data base is still incomplete, and should be exhaustively reported before a complete application is attempted.

Up to this point, it can be seen that the changes investigated are generally compatible to implicational scaling and Bailey's explanatory developmental model. In the case of palatalization, the change and relationship appear to be clear. Only relative weights and directions of change have been assigned to forms and features in these scales since further investigation of rules and environments governing innovation must be conducted. However, application of the model begins to reveal directions of change and relationships of features in these subtle language varieties. For contrast, the following example will be presented in a slightely different perspective.

4. Labiovelars in Eastern Viti Levu

In Fiji, most dialects show a contrast between three labiovelar consonants (i.e., *-kw-*, *-gw-*, *-qw-*) and their velar counterparts (*-k-*, *-g-*, *-q-*. In the western subgroup of Viti Levu (composed of the communalects WAY, KBY, NKR, MGD, TBW, BRV, BTW, TBI, NLE), the rules producing labiovelar consonants (**k > kw/ _ a,e*) are in categorical operation (1983:380). In the communalects of Vanua Levu (Appendix, Map 1), the rules are in categorical non-operation (i.e., **k > k/ _ a,e*), and the two communalects closest to Vanua Levu located on Viti Levu (TKM, MNM) also exhibit this categorical non-operation. The eastern Viti Levu communalects are known to be in a prestige area (1983:387) which influences change. Between Vanua Levu, NE Viti Levu, and Western Viti Levu is a series of communalects undergoing a labiovelar to velar shift. These are (Appendix, Map 5):

% of Labiovelars	Communalect
.88	WDN
.74	NDR
.70	NMS
.56	LUT
.30	Nav (a small village)
.23	NMM

Those communalects closest to the + labiovelar area of Viti Levu (i.e., WDN, NDR, NMS) show the greatest percentage of labiovelars and least percentage of change. Those closest to the area showing a non-operation of the rule (+ velar) have the least percentage of labiovelars and greatest percentage of change.

Table V

Labiovelars in Eastern Viti Levu

Toward the Construction of an Implicational Scale

RULE: kw > k / _ a, e

RULE: gw > g / _ a, e

RULE: qw > q / _ a, e

Form:

Communalect:	-kw-	-gw-	-qw-	-k-	-g-	-q-
WDN	+	+	+	-	-	-
NDR	+	+	+	-	-	-
NMS	+	+	X	-	-	X
LUT	+	+	X	-	-	X
NAV	X	X	-	X	X	+
NMM	X	-	-	X	+	+

Key:

+ = form attested

X = both forms attested; e.g., kw and k *(true variable rule)*

- = form not attested

Note: The communalects cited are found only in Eastern Viti Levu

See Map 5 for geographical distribution and implicational ordering

To illustrate what is happening to those communalects undergoing change, a scale was constructed showing only those communalects where a variable rule is in effect (Table V). In the scale, over 70% of the forms attesting a labiovelar or velar (each was separated) are noted as (+). Less than 30% are noted as (-), and 40% - 60% (i.e., almost equal in distribution) are noted as (X). This scale, then shows the clear operation of a variable rule (i.e., all X's). Documenting this variable change may give insight not only to the direction of innovation, but to the relative weighting of forms as well. With this variable rule notation, it can be seen that the *kw* > *k* change is only reaching a 40% - 60% range in Nav and NMM (closest to the + labiovelar area). The *gw* > *g* innovation is moving more quickly, taking a strong hold (70%) in the NMM area, but again is shown as substantial only in those communalects closest to the + velar area (Appendix, Map 5). The *qw* > *q* innovation is moving most quickly, taking a substantial hold in NMS, LUT, and strong hold in Nav, NMM (over 70%).

With this information, one may state that the **q* velar may be the strongest weighted for change, followed by **g*, with **k* being the least weighted and slowest to change. This perspective allows Bailey's proposed model of directionality and weighting of features to be used in detailed analysis, and also points to directions for more finely-tuned study of phonological features and forms undergoing change through space and time in the minimally variant lects of Fiji.

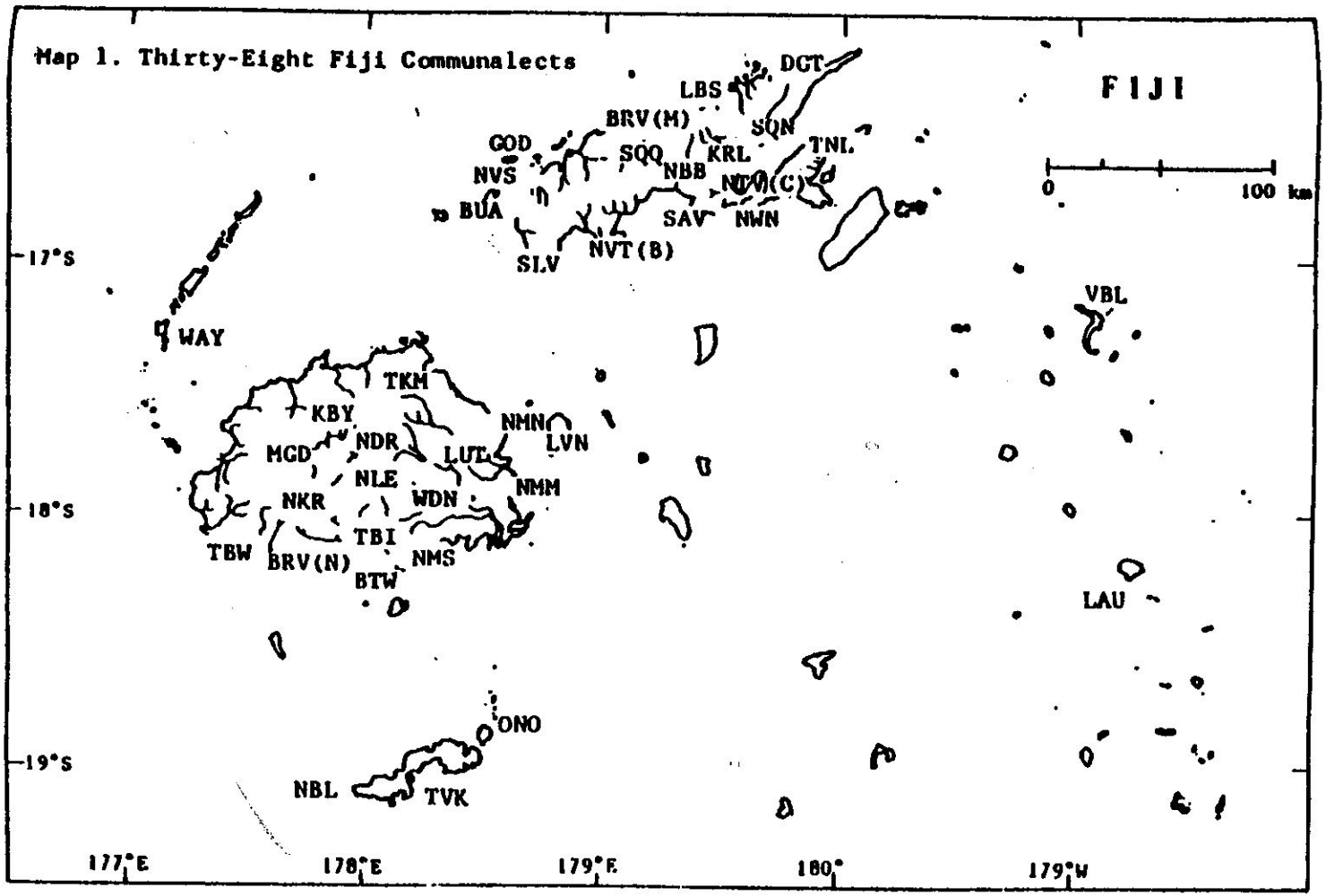
Conclusion

In summary, the developmental model shows general validity when used to interpret Fijian phonological variation, and also to interpret phonological variation in minimally different language varieties. Geraghty's data of attested features and forms per minimally different communalect allow the construction of several implicational scales that point to relationships among features as well as to direction and rate of phonological change. The investigation of innovations across Fijian communalects supports the general explanatory power of the developmental model. However, future work in this direction should include more detailed data collection to ascertain what changes are occurring within, as well as across, communalects. Furthermore, the application of this data to corresponding feature weighting will provide explicit direction of shift and explanation of change. A detailed investigation of social influences (e.g., prestige factors in communalect use) must also be conducted on an inter-communalect as well as intra-communalect level. Such future research in the minimally variant lects of Fiji promises to be valuable not only to specific dynamic models of change, but to general conceptual frameworks in sociolinguistic theories of variation.

Acknowledgments

I would like to thank Professor Charles A. Ferguson, Linguistics Department, Stanford University, for his guidance, comments, and thoughtful review of the material presented in this paper. The study reported here developed from research on theories of phonological variation in Dr. Ferguson's graduate course on Sociolinguistic Theory at Stanford University.

Appendix



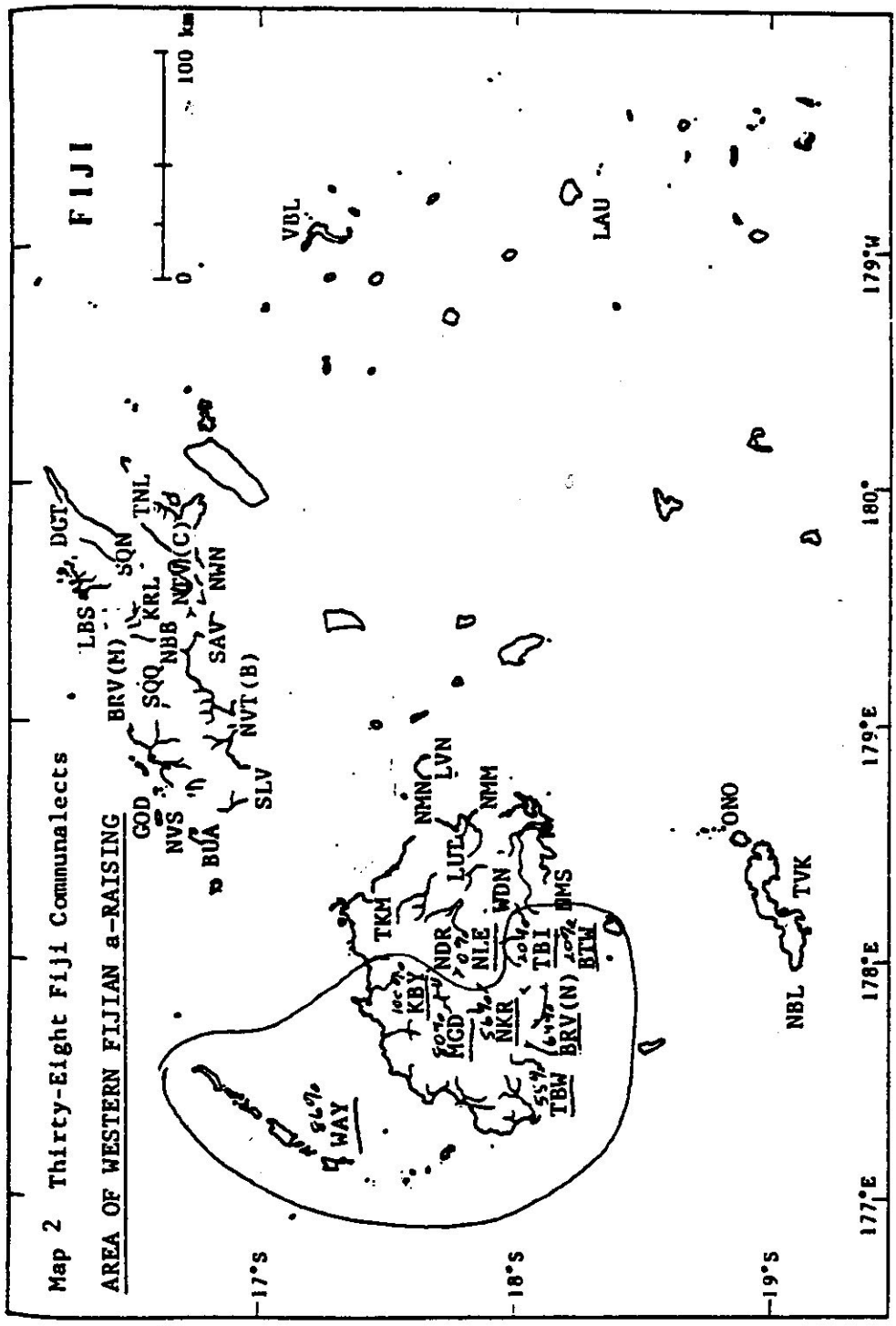
Map 1

Geographical Distribution of 38 Communalects in Fiji

Geraghty, Paul A. *The History of the Fijian Languages.*
Honolulu: University of Hawaii Press, 1983:25.

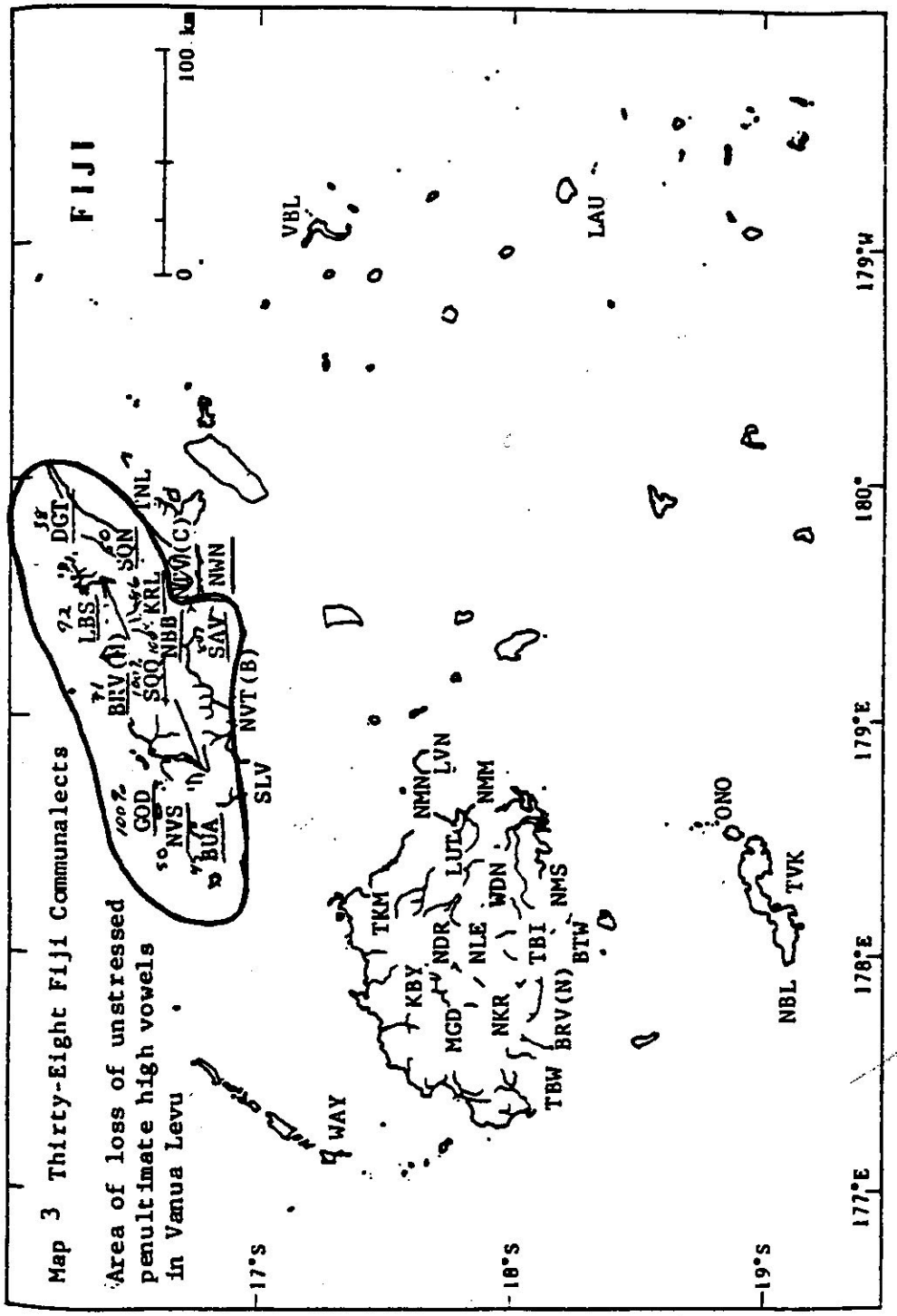
Map 2

Area of Western Fijian a-Raising



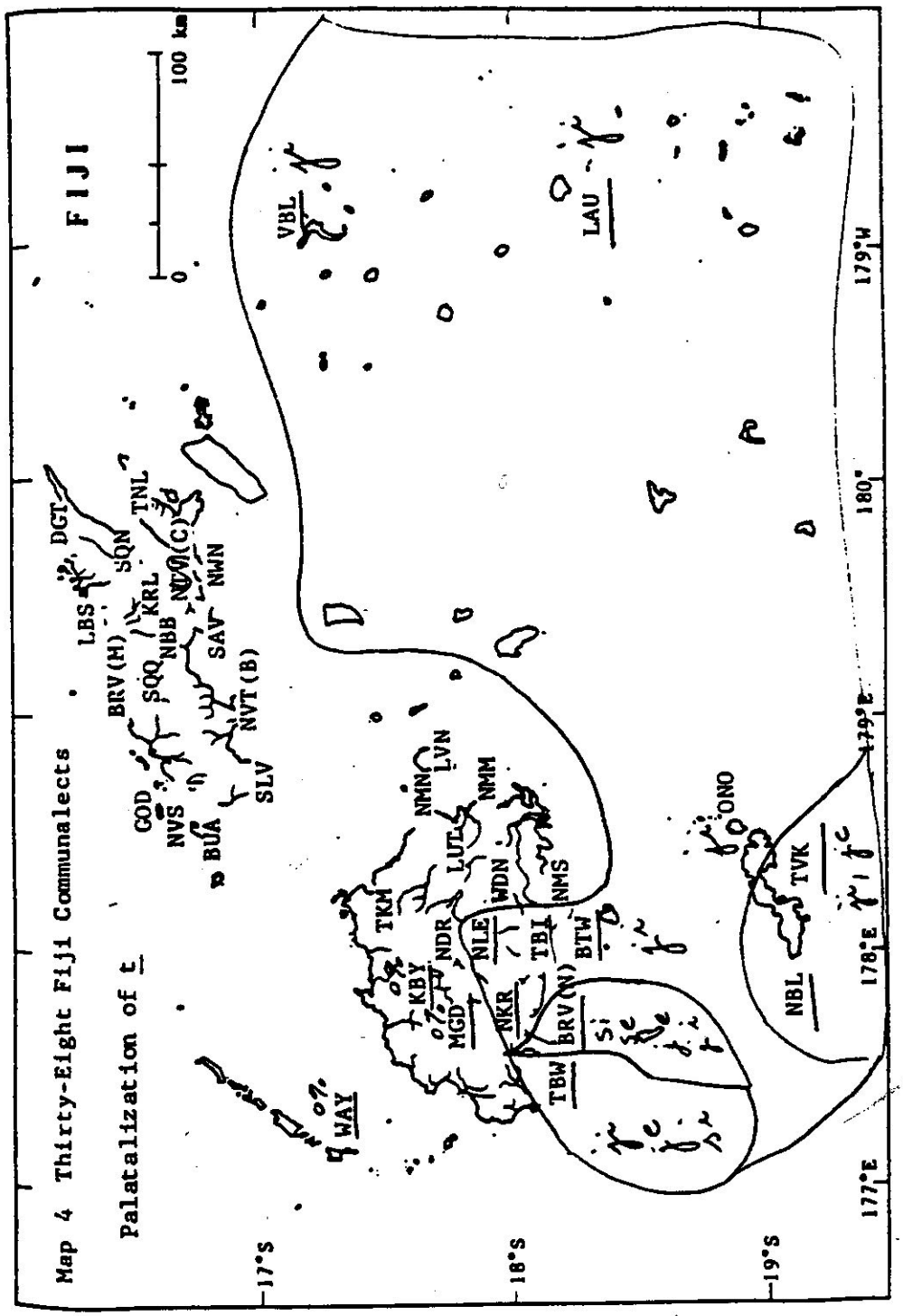
Map 3

Area of Unstressed Penultimate High Vowel Loss in Vanua Levu



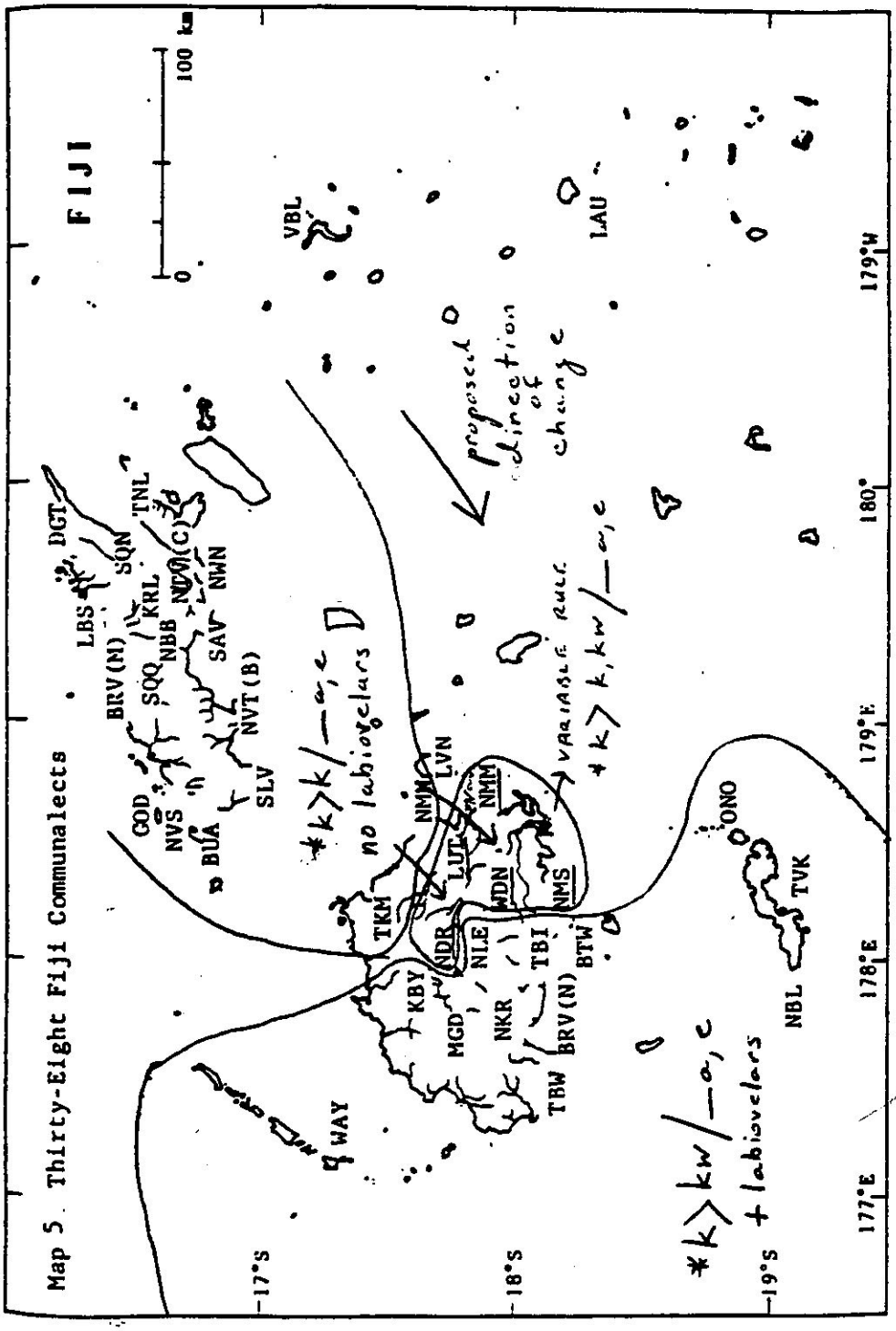
Map 4

Areas of /t/ Palatalization



Map 5

Areas of Labiovelar Shift
in Eastern Viti Levu



References

Bailey, Charles-James N. Toward principles governing the progress and patterning of phonetological development. In C.-J. Bailey and R. Harris (Eds.), *Developmental Mechanisms of Language.* New York: Pergamon Press, 1984.

-----. Developmental Linguistics. *Technische Universität Berlin Arbeitspapiere zur Linguistik*, 1980.

-----. Further observations on unmarked rule order. *International Journal of American Linguistics*, 1975, *41*, 73-78.

-----. *Variation and Linguistic Theory.* Washington, D.C.: Center for Applied Linguistics, 1973.

-----. The integration of linguistic theory: Internal reconstruction and the comparative method in descriptive analysis. In R. Stockwell and R. Macaulay (Eds.), *Linguistic Change and Generative Theory.* Bloomington: Indiana University Press, 1972.

Berdan, Robert. The necessity of variable rules. In R. Fasold (Ed.), *Variation in the Form and Use of Language.* Washington, D.C.: Georgetown University Press, 1983.

Bickerton, Derek. Inherent variability and variable rules. *Foundations of Language*, 1971, *7*, 457-492.

De Camp, David. Is a sociolinguistic theory possible? *Georgetown University Monograph Series on Languages and Linguistics*, 1970, *21*, 157-173.

-----. Implicational scales and sociolinguistic linearity. *Linguistics*, 1973, *73*, 40-43.

Dürmüller, Urs. *Towards a Varieties Grammar of English.* Berne: Peter Lang, 1983.

Fasold, Ralph. Linguistic analyses of the three kinds. In D. Sankoff (Ed.), *Diversity and Diachrony.* Philadelphia: Johns Benjamins Publishing Co., 1986.

-----. The Bailey wave model: A dynamic quantitative paradigm. In R. Fasold and R. Shuy (Eds.), *Analyzing Variation in Language.* Georgetown University Press, 1975.

Geraghty, Paul A. *The History of the Fijian Languages.* Oceanic Linguistics Special Publication, *19*. Honolulu: University of Hawaii Press, 1983.

Klein, Wolfgang and Norbert Dittmar. *Developing Grammars.* Berlin: Springer- Verlag, 1979.

Labov, William. Where do grammars stop? *Georgetown University Monograph Series on Language and Linguistics*, 1972, *25*, 43-88.

-----. Contraction, deletion, and inherent variability of the English copula. *Language*, 1969, *45*, 715-762.

Labov, William, Malcah Yaeger, and Richard Steiner. *A Quantitative Study of Sound Change in Progress.* Volumes I and II. NSF Report No. NSF-GS-3287. Philadelphia: University of Philadelphia, 1972.

Ornstein, Jacob and R.F. Murphy. Models and approaches in sociolinguistic research in language diversity. *Anthropological Linguistics*, 1974, *16*,141-167.

Pawley, Andrew. Grammatical reconstruction and change in Polynesia and Fiji. In S.A. Wurm (Ed.), *Pacific Linguistic Studies in Honor of Arthur Capell*, 1970, *13*.

Pawley, Andrew and Timoci Sayaba. Fijian dialect divisions: Eastern and western. *Journal of Polynesian Society*, 80, *4*, 1971.

Sankoff, Gillian. Above and beyond phonology in variable rules. In C.-J. Bailey and R. Shuy (Eds.), *New Ways of Analyzing Variation in English.* Washington, D.C.: Georgetown University Press, 1973.

Schmidt, J. *Die Verwandtschaftsverhältnisse der Indogermanischen Sprachen*. Weimar: Böhlau, 1872.

Schütz, Alfred. *The Fijian Language.* Honolulu: University of Hawaii Press, 1986.

Trudgill, Peter. *Dialects in Contact.* Oxford: Basil Blackwell Ltd., 1986.

Wolfram, Walt. Variable constraints and rule relations. In R. Fasold (Ed.), *Variation in the Form and Use of Language*. Georgetown University Press, 1983.

-----. On what basis variable rules? In C.-J. Bailey and R. Shuy (Eds.), *New Ways of Analyzing Variation in English.* Washington, D.C.: Georgetown University Press, 1973.